

# **Textbooks and electronic resources for low secondary schools**

## **An analysis of the French situation**

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### **Introduction**

A three years research (1999-2002), coordinated by INRP (National Institute of Pedagogical Research), has been devoted to textbooks and electronic resources for lower secondary schools. The general idea was to describe and better understand the transition from paper to electronic textbooks, mainly taking into account three school subjects: history and geography, mathematics, technology. Several results, concerning offers and uses of textbooks and electronic resources, have been obtained and reported in a book (Baldner *et al.*, 2003).

In this text, we try to summarize main results of this study, concluding with a discussion focused on some alternative models of pedagogical resources. But first of all, we will give some hints about our research point of view.

Our research activity deals with design and use of electronic resources in education. We adopt a sort of “continuist” vision (Moeglin, 2002). To foresee possible place and roles of electronic resources, we need to have a deeper understanding of the overall context of design and use of paper textbooks. The ecotone metaphor, proposed in the context of pedagogical resources by Mike Horsley<sup>1</sup>, seems relevant: a new emerging situation, partially an heritage of the past, has to be described and analyzed. In a short term, there will be no substitution, no breaking but progressive elaboration of hybrid solutions. The problem is to elaborate about the existing conditions of electronic manuals, in the context of nowadays educational organization and structure and instrumentation available, which offer potentialities and constraints.

### **Paper textbooks: problems and limitations**

To briefly summarize the French situation concerning textbooks for low secondary schools, there is absolutely no control from the Educational Ministry, private companies directly propose textbooks, taking into account the prescribed national curriculum. The

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<sup>1</sup> <http://alex.edfac.usyd.edu.au/LocalResource/TREAT/ics01/paper-4.html>

choice only belongs to the teachers in each school and the textbooks are lent free of charge for students. The authors of textbooks are mainly teachers, who have set up interesting activities in their classroom and are often aware of recent results of didactical research.

In this open context, we could imagine observing a great variety of innovative books. This is not really the case. The studies conducted in different school subjects give a very different landscape.

A study of 8 different history books for grade 9 shows important similarities between them (they are quite all the same!), a low variety of proposed student activities based upon a didactical or pedagogical not really innovative model.

In mathematics, we record an increasing complexity of textbooks. They are catalogs of description of school activities and exercises, including directions for use. They no more are reference books for students, many of them facing great difficulties to read and understand them.

In technology, an new school subject for low secondary schools, with no tradition of textbook design, the first ones are, before all... manuals! This new subject is oriented towards projects, but not its corresponding textbooks.

We also observe a classical side-effect of the organization of the market of textbooks: as teachers select the textbooks, publishers strategy is oriented towards them, their real clients. Possible use by pupils are only considered at a secondary level.

Facing these results, we could think that paper textbooks are an out-dated model. They have to face too many contradictory constraints: tool for teacher, book for student or parents, catalog of classroom situations... A model that became too complex and cannot anymore support paper limitations, a sort of hypertext you have to operate by yourself! Textbooks remain important in the French educational system, but they are no more books, in the sense that they cannot be read as classical books. They are undefined or ill-defined objects and one can consider that they have to become digital to fill all the requirements needed by the different stakeholders.

### **Electronic resources: an abundant offer, for which uses?**

Recording the offer of electronic resources, we observe a rather abundant and hybrid offer. For example, in mathematics, some textbooks include cdroms or provide an associated website. In history and geography, one can access to a great deal of on-line resources. Nevertheless, a set of problems can easily be located.

First of all, the redundancy is very important. For example, the cdrom given with a mathematical manual has exactly the same content. Each screen corresponds exactly to half a page of the paper manual (some additional links are added). The intended usage is not clear: is the cdrom designed for homework?

The debate is, as usual, directed by technology promises. New devices as the « cartable électronique » (digital schoolbag) would solve main educational problems. The digital schoolbag appears as a metaphor with very different examples corresponding to a portable device (Vivendi Universal) or services with Internet access: the i-m@nuel (Editronics), the schoolbag from University of Savoie, the ENT (numerical environment for work), and so on.

The first experiments show that these devices are, for the moment, not really conclusive, but many producers want to convince all the stakeholders that they really are “the future”.

For example, in the low secondary school of Moreuil, where the Vivendi digital schoolbag is experimented, its arrival gave the opportunity to organize a communication show. The Korean TV was present and on the website<sup>2</sup>, several pictures and videos celebrate the event. One photograph show two students comparing the weight of the digital schoolbag with some textbooks:



*“On one pan of the balance, the digital schoolbag, on the other : the dictionary, the history book... The science book does not lie and the pan already leans...”*

Even if the question of the schoolbag weight is a recurrent problem evocated by newspapers each beginning of the school year, it is a very weak argument in favor of electronic devices!

This short story shows that the benefit of digital devices are not so clear, and even if electronic resources can certainly offer new opportunities, notably due to their multimedia or interactive features, their real uses by students and teachers in classroom settings raise many interrogations.

Studies in history teaching (by questionnaires and interviews, reported in Baldner *et al.*) give some interesting hints. It appears that, in this subject matter, a good teacher does not teach the content of the manual. Her expertise relies on the fact that she is able to build her own discourse, not the one of the textbook. So, an important question of compatibility

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<sup>2</sup> [http://www.ac-amiens.fr/college80/moulin\\_moreuil/SVT/cartabl&/cartable.htm](http://www.ac-amiens.fr/college80/moulin_moreuil/SVT/cartabl&/cartable.htm)

between resources and professional identity appears: teachers use resources in a specific matter which seems legitimate according to their views of teaching and most digital resources fit 'old pedagogy' not accepted by most teachers. Another point concerns the exercises associated with information and communication technologies. Too often, old fashion exercises are proposed (for example multiple choices questionnaires). A double evolution appears then necessary, evolution of the professional identity of teachers and evolution of the set of resources included in new digital devices, their underlying teaching philosophy and exercises models.

Studies of on-line resources and teacher training practices in cartography give similar results: abundant offer, but not simple direct use. Using information geographical systems in education requires new competencies for students and for teachers as well (statistics, semiology, ICT...). But, one can observe a backward movement compared to the 90's with old cartographic systems. Advanced teachers used these tools in a great variety of ways with a more clear understanding of their scientific foundations. Nowadays, most activities (in low secondary school) remain too simplistic. The process of finding legitimate classroom activities including digital maps does not seem to be on the good track. Most proposed exercises are, as in history education, not really interesting.

Other problems have to be pointed out: how to design good electronic resources? As we have just seen, most examples are not really convincing. Have traditional publishers the necessary competencies? Which authors for these new resources, as we observe that textbook authors are not really prepared? For school use, the question is also to create good collective activities, without any clear model for that.

Telecom operators, as in many industrialized countries, have made offers. But they are not directly interested in education and what they propose is often between game and work, may be good for use at home, not in school.

So, the panorama is a bit mixed, no clear tracks to be observed. But the general context is also evolving.

### **Educational system in evolution**

An on-going process of decentralization leads local authorities to take more responsibility towards resources for education and change the underlying economic and diffusion models. But what could be a good economical model for digital resources? Except for the case of encyclopedias, digital resources producers face great difficulties (this sector does not pay for

the moment) to sell them in the educational market. The French Ministry has decided to launch a plan to help them. Taking into account an increasing use of internet in classroom and at home, the project of the French Ministry of Education called “Espaces numériques de travail” (numerical workspaces) raises the issue of links between classroom work and home work. But, as described below, the first experiments of electronic textbooks are not really conclusive. Nevertheless, these initiatives will have some effects.

The process of decentralization may lead to a possible new centralization. The choice of textbook belongs to teacher, but can be given to the school or local authority. We observe that in many schools, digital resources are chosen by documentation teachers and many local authorities, who already pay for computers, networks and internet access, wish to be more involved in the choice of educational resources.

The success of “parascolaire” (books or booklets bought by parents for their children to do schoolwork at home, often during holidays) can be a step towards home schooling or at home complementary education, facilitated by *digital schoolbag* projects. The educational conceptions grounded upon lists of elementary skills or competences and decontextualized resources can also reinforce this movement.

### **Tension : books or catalogue of resources**

Three models can be roughly distinguished:

- the classical model of textbook as a book: a reference text with a real author who is an authority in the considered domain. The textbook is the “text of the knowledge”.
- the didactical model: semi-interactive manuals including a variety of activities. A book including directions for use. For many reasons, it appears as an up-dated model according to the constraints of paper. May be an intermediate model needing a new support?
- the *marketplace* model, set of independent resources, mainly digital, that can be accessed by internet, with two opposite economic models: free exchange or control by big companies.

The questions arise of the co-existence of these three models and the impact of ICT on their evolution and co-existence. A possible scenario could be an harmonious combination of these models, mixing paper and digital formats. But, the international interest towards pedagogical objects is quite problematic, even disquieting. International efforts to have norms for educational metadata, to produce educational documents by composition could

have a negative impact if the difference between machine communication and human and social behavior are not taken into account. Norms are not neutral and the Meccano metaphor (building a course by automatic composition of elementary learning objects) is inoperative (see Bruillard and Passardière, 2003). The different norms LOM<sup>3</sup>, SCORM<sup>4</sup>... are certainly useful for systems to talk together, but have strong limitations. For example, which trace of usages in object definitions?

Does a book cut in small pieces keep a real meaning? This a classical paradox of hypertext: on the one hand, to have a lot of links between blocks of texts is certainly useful and on the other hand, we need linear texts and even better we need rhetoric of narrative texts.

### **Concluding remarks**

An abundant and diverse offer (textbooks, cd-roms, educational web sites...) is inscribed in a segmented and indecisive market: multiplicity of publishers, diffusion circuits... Contrasted but sometimes not really convincing usages do not indicate clear directions. The waiting horizon of the different stakeholders remain undefined.

The current context requires some evolutions of the current model of textbooks. Rejecting the naive vision of continual and progressive integration of electronic resources in education, we have to question the possible ways of *scholarisation* of these resources regarding what is called “disciplinary identity” of teachers and mode of *exercisation* in the classroom. As for other social activities, no simple answer seems possible, but a set of linked changes: professional development, evolution of teachers professional identity, creation of new document models...

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<sup>3</sup> Learning Object Metadata. See <http://ltsc.ieee.org/wg12/>

<sup>4</sup> Sharable Content Object Reference Model. See <http://www.adlnet.org/>

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